What is claimed is:

1. A method of fabricating an imagine sensor device, comprising:

providing a substrate having a plurality of trenches therein;

forming a first anti-reflective layer on surfaces of the trenches;

filling an insulating layer in the trenches for forming a plurality of shallow trench isolation regions;

forming at least one photo sensitive region within the substrate between two neighboring isolation regions; and

forming a second anti-reflective layer at least covering the photo sensitive region.

2. The method of fabricating an imagine sensor device of claim 1, wherein the material of the first anti-reflective layer is selected from a group consisting of silicon nitride or silicon oxynitride.

3. The method of fabricating an imagine sensor device of claim 1, wherein the step of forming the first anti-reflective layer comprises a chemical vapor deposition method.

4. The method of fabricating an imagine sensor device of claim 1, wherein the material of the second anti-reflective layer is selected from a group consisting of silicon nitride or silicon oxynitride.

5. The method of fabricating an imagine sensor device of claim 1, wherein the step of forming the second anti-reflective layer comprises a chemical vapor deposition method.

6. The method of fabricating an imagine sensor device of claim 1, wherein the step of forming the photo sensitive region comprises performing an implantation process.

7. The method of fabricating an imagine sensor device of claim 1, further comprising forming a liner layer on the surfaces of the trenches between the steps of providing the substrate and forming the first anti-reflective layer.

8. A photo imagine sensor device, comprising:

a substrate, having a plurality of trenches formed thereon;

a first anti-reflective layer, formed on the surfaces of the trenches;

an insulating layer, formed on the first anti-reflective layer, filling the trenches, wherein a plurality of shallow trench isolation regions are composed of the trenches, the first anti-reflective layer and the insulating layer;

at least one photo sensitive region, formed within the substrate between two neighboring shallow trench isolation regions; and

a second anti-reflective layer, formed on the photo sensitive region.

9. The photo imagine sensor device of claim 8, wherein the material of the first anti-reflective layer is selected from a group consisting of silicon nitride or silicon oxynitride.

10. The photo imagine sensor device of claim 8, wherein the material of the second anti-reflective layer is selected from a group consisting of silicon nitride or silicon oxynitride.

11. The photo imagine sensor device of claim 8, further comprising a liner layer between the surfaces of the trenches and the first anti-reflective layer.